

## REMARKS

### I. STATUS OF THE CLAIMS

Claims 1-7, 9-16, 23-33, 41-43 and 47-49 are pending in the present application. Claims 1, 41, 43 and 47 are the independent claims.

Claims 8 and 45 have been cancelled without prejudice to or disclaimer of the subject matter recited therein.

Claims 1, 9, 10, 11, 28, 30, 41, 42, 43, 47 and 49 have been amended. No new matter is believed to have been added.

### II. THE INFORMATION REQUEST UNDER 37 C.F.R. §1.105

Applicants hereby enclose the information requested by the Examiner relevant for the examination of claims 47-49.

### III. THE REJECTION OF CLAIMS 1-16, 23-33, 41-43, 45 AND 47-49 UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Applicant has amended independent claim 1 to more clearly recite the structural elements and the relationships between the structural elements in accordance with the Examiner's comments.

Accordingly, Applicant respectfully submits that independent claim 1, as amended, fully complies with the requirements of 35 U.S.C. § 112, second paragraph. Proper support for the amendment to claim 1 is found in the specification at least at page 8, lines 1-7.

Claims 2-16 and 23-33 are dependent from claim 1.

Therefore, Applicant respectfully requests that the rejection under 35 U.S.C. § 112, second paragraph, of claims 1-16 and 23-33 be withdrawn.

Applicant has amended independent claims 41, 43 and 47 to more clearly recite the structural elements and the relationships between the structural elements as also noted by the Examiner.

Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. § 112, second paragraph, of claims 41-43 and 47-49 be withdrawn.

Independent claim 45 has been cancelled without prejudice or disclaimer of the subject

matter recited therein. Accordingly, the rejection of this claim is moot.

IV. THE REJECTION OF CLAIMS 1-3, 41-43 AND 45 UNDER 35 U.S.C. §102(b) AS BEING ANTICIPATED BY U.S. PATENT NO. 6,661,707 TO MATSUI (HEREINAFTER MATSUI)

Applicant respectfully traverses this rejection for at least the following reasons.

Independent claim 1, as amended, recites, a data scrambler comprising, amongst other novel features, a random data generator which generates random data having a **random data generation cycle** based on a result obtained by multiplying at least a size of a first data frame by a result obtained by dividing a data amount of two tracks in an outermost circumference of the optical disc by a size of a second data frame.

Matsui discloses a random data generation cycle using the number of registers and variables in the calculation of the random data generation cycle in units of sectors. Matsui however fails to teach or suggest the random data generator generating data having a **random data generation cycle** based on a result obtained by multiplying at least a size of a first data frame by a result obtained by dividing a data amount of two tracks in an outermost circumference of the optical disc by a size of a second data frame.

Therefore, Matsui fails to teach or suggest the features recited in independent claim 1. Furthermore, Matsui discloses obtaining a random data generation cycle less precisely than the one taught by an aspect of the present invention.

Furthermore, independent claim 1, recites serially arranged registers, which shift-store n bits and generate the random data, and use a total of n values as initial values, including a first initial value and register values, which are supplied in each 4K times left-shifting of the first initial value, a first serial logic circuit having a plurality of logic gates, which exclusive-ORs outputs of a first group of the registers which correspond to a number of effective branches with a predetermined branch value, and feedbacks the random data to a least significant register, wherein the data scrambler further comprises a second logic circuit which scrambles outputs of a second group of registers and input data and outputs scrambled data in units of bytes to the recording and/or reproducing apparatus.

Matsui discloses a scrambling device which includes a scrambled signal generating section 50 composed of an initial value memory 20 for generating previously stored initial values, an M period sequence generator 30 for generating scrambling signals and an adder 40 for adding information signals and the scrambling signals to be recorded (column 5, lines 38-51). Therefore, Matsui discloses a scrambling device having a memory, a sequence generator and

an adder.

Accordingly, Matsui fails to teach or suggest, amongst other aspects, a first serial logic circuit having a plurality of logic gates, which exclusive-ORs outputs of a first group of the registers which correspond to a number of effective branches with a predetermined branch value, and feedbacks the random data to a least significant register, and a second logic circuit which scrambles outputs of a second group of registers and input data and outputs scrambled data in units of bytes to the recording and/or reproducing apparatus.

Therefore, Applicant respectfully asserts that the rejection of claim 1 under 35 U.S.C. § 102(b) should be withdrawn because Matsui fails to teach or suggest each feature of independent claim 1, as amended.

Claim 8 depends from claim 1 but has been cancelled without prejudice or disclaimer, therefore the rejection of claim 8 is moot. Furthermore, Applicant respectfully asserts that dependent claims 2-7, 9-16 and 23-33 are allowable at least because of their dependence from claim 1, and the reasons set forth above.

Independent claim 41 recites, a data scrambler, comprising, amongst other novel features, a first serial logic circuit having a plurality of logic gates, which exclusive-ORs outputs of a first group of the registers and feedbacks the random data to a least significant register, and a second logic circuit which scrambles outputs of a second group of registers and input data and outputs scrambled data in units of bytes to the recording and/or reproducing apparatus.

As noted above, Matsui discloses a method of recording information signals on an information recording medium and a scrambling device. The scrambling device includes a scrambled signal generating section 50 composed of an initial value memory 20 for generating previously stored initial values, an M period sequence generator 30 for generating scrambling signals and an adder 40 for adding information signals and the scrambling signals to be recorded (column 5, lines 38-51).

Accordingly, Matsui fails to teach or suggest a first serial logic circuit having a plurality of logic gates, which exclusive-ORs outputs of a first group of the registers and feedbacks the random data to a least significant register, and a second logic circuit which scrambles outputs of a second group of registers and input data and outputs scrambled data in units of bytes to the recording and/or reproducing apparatus, as recited in newly amended independent claim 41.

Therefore, Applicant respectfully asserts that the rejection of claim 41 under 35 U.S.C. § 102(b) should be withdrawn because Matsui fails to teach or suggest each feature of

independent claim 41 as amended.

Furthermore, Applicant respectfully asserts that dependent claim 42 is allowable at least because of its dependence from claim 41, and the reasons set forth above.

Independent claim 43 recites, amongst other novel features, a data scrambler for a high density optical recording and/or reproducing apparatus, the data scrambler comprising a random data generator which generates random data and adjusts a random data generation cycle of the generated random data based upon a data amount in an **innermost circumference** of the optical disc and the size of each sector and a size of each error correction block, and a scrambling circuit which scrambles the generated random data and outputs scrambled data in units of bytes.

Matsui discloses a method of recording information signals on an information signal recording medium formed with a plurality of circular tracks (column 1, lines 7-10). Matsui further discloses information signals are scrambled by a scrambled signal generating section 10, and then recorded on a compact disk as the scrambled information signals (column 3, lines 53-57). Matsui further discloses that the number of times that one scrambling signal is repeated continuously is denoted by  $M_{loop}$  and that when the degree of the M period sequence is decided on the basis of the information signal bits contained in the **outermost circumferential track**, it is necessary to use the scrambling signal  $B_{sect}$  or more before the scrambling signal used at the first of the outermost circumferential track, as the scrambling signal used at the sector positioned on the same radial line of the first of the **outermost circumferential track** (column 8, lines 33-47). Accordingly, Matsui uses an **outermost circumferential track** to determine the period sequence.

As noted above, independent claim 43 recites a random data generator which generates random data and adjusts a random data generation cycle of the generated random data based upon a data amount in an **innermost circumference** of the optical disc and the size of each sector and a size of each error correction block.

Accordingly, Applicant respectfully asserts that the rejection of claim 43 under 35 U.S.C. § 102(b) should be withdrawn because Matsui fails to teach or suggest each feature of independent claim 43, as amended.

Independent claim 45 has been cancelled without prejudice or disclaimer of the subject matter recited therein. Accordingly, the rejection of claim 45 under 35 U.S.C. §102(b) is moot.

Independent claim 47, as amended, recites, amongst other novel features, a data scrambler comprising a random data generator which generates the random data using a 32KB in order to scramble data having structure of 2 KB for a sector or a data frame and 64KB for an ECC block, and a scrambling circuit which scrambles the generated random data and outputs scrambled data in units of bytes.

Matsui discloses a method of recording information signals on an information recording medium and a scrambling device. The scrambling device includes a scrambled signal generating section 50 composed of an initial value memory 20 for generating previously stored initial values, an M period sequence generator 30 for generating scrambling signals and an adder 40 for adding information signals and the scrambling signals to be recorded (column 5, lines 38-51). Matsui fails to teach or suggest a data scrambler comprising a random data generator which generates the random data using a 32KB in order to scramble data having structure of 2 KB for a sector or a data frame and 64KB for an ECC block, and a scrambling circuit which scrambles the generated random data and outputs scrambled data in units of bytes, as recited in newly amended independent claim 47.

Accordingly, Applicant respectfully asserts that the rejection of claim 47 under 35 U.S.C. § 102(b) should be withdrawn because Matsui fails to teach or suggest each feature of independent claim 47.

Furthermore, Applicant respectfully asserts that dependent claims 48 and 49 are allowable at least because of their dependence from claim 47, and the reasons set forth above.

V. THE REJECTION OF CLAIMS 4-16 AND 20-33 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER MATSUI AND ECMA-267 (HEREINAFTER ECMA)

Applicant respectfully traverses this rejection for at least the following reasons.

Claims 4-16 and 20-33 depend from claim 1 and as noted above, Matsui fails to teach or suggest the features recited in independent claim 1.

ECMA discloses a mechanical, physical and optical characteristics of a 120 mm, read-only optical disc but fails to teach or suggest the features recited in newly amended independent claim 1. Therefore, ECMA fails to cure the deficiencies of Matsui.

Accordingly, Applicant respectfully asserts that dependent claim 4-16 and 20-33 are allowable at least because of their dependence from claim 1, and the reasons set forth above.